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(58) Field of search

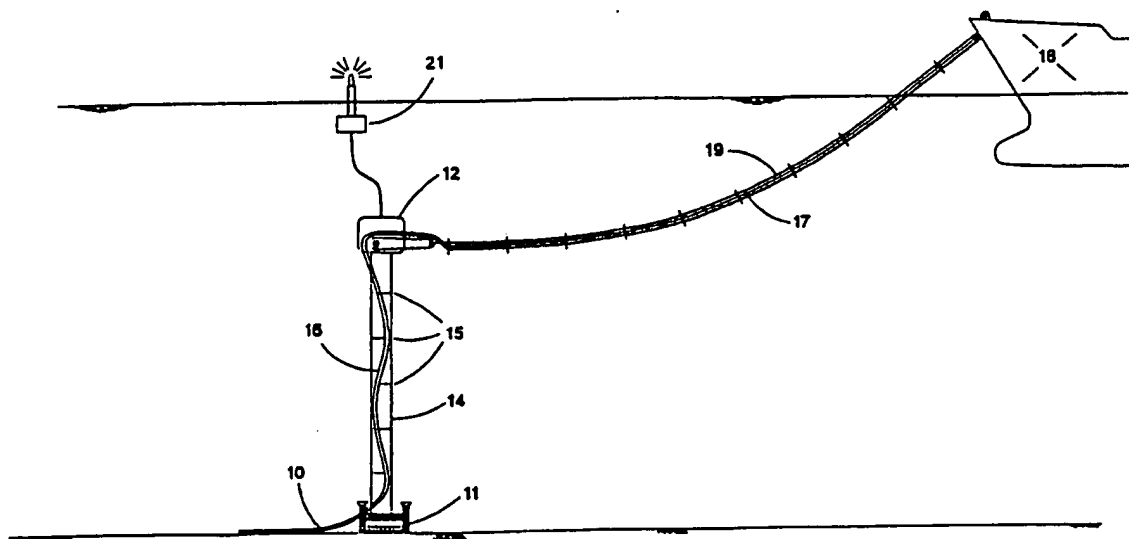
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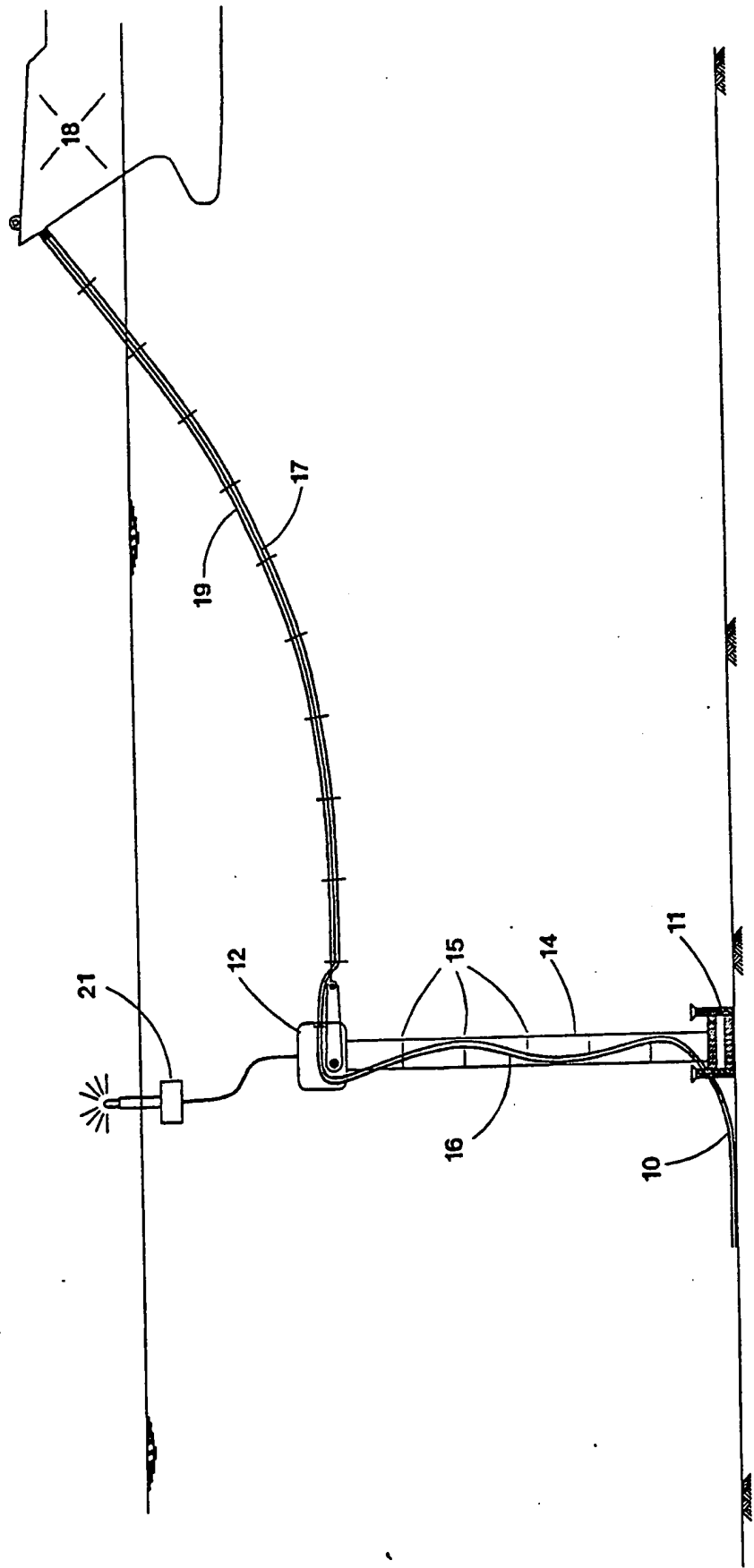
(54) Loading/anchoring system for a tanker at an offshore location

(57) Loading system for a tanker 18 at an offshore location, and comprising a seabed anchorage 11, a buoyant riser support body 12, a plurality of wires 14 securing the body to the anchorage such that the body is held beneath the surface of the water at that location, a plurality of spacers 15 disposed at intervals along the wires to hold the wires laterally apart, a riser hose 16 extending from the vicinity of the anchorage up to the body and constrained by the spacers against lateral movement away from the wires, and a further hose 17 extending from the body to a connection to the tanker, whereby the tanker can weathervane relative to the anchorage.



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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LOADING SYSTEM

The invention relates to a loading system for transferring fluids to a tanker at an offshore location.

It is known for tankers to load crude oil from subsea fields at buoyant mooring columns fixed to the seabed. Such columns may have complex articulations at their feet, and loading gantries or yokes above normal sea level. They may also incorporate a complex fluid swivel. These columns have been subject to forces from wind and wave, and have in the past broken away from their designated locations under such environmental loads.

The invention provides a loading system for a tanker at an offshore location, and comprising a seabed anchorage, a buoyant riser support body, a plurality of wires securing the body to the anchorage such that the body is held beneath the surface of water at that location, a plurality of spacers disposed at intervals along the wires to hold the wires laterally apart, a riser hose extending from the vicinity of the anchorage up to the body and constrained by the spacers against lateral movement away from the wires, and a further hose extending from the body to a connection to the tanker, whereby the tanker can weathervane relative to the anchorage.

There may be a plurality of hoses and further hoses.

It is preferred that there are at least three wires, and the riser hose(s) are constrained to adopt a helical path by the spacers disposed at intervals along those wires.

A specific embodiment of this invention will now be described with reference to the accompanying drawing, which is a diagram showing in cross section a tanker loading from a subsea oil field.

As shown in the drawing, a subsea pipeline 10 terminates at a seabed anchorage 11. At an intermediate water depth above the anchorage 11 there is a buoyant riser support body 12. The body 12 is secured to the anchorage 11 by three wires 14 so that it is held at the intermediate water depth by the wires 14 against its own buoyancy. The wires 14 are held apart by spacers 15.

One or more riser hoses 16 extends up from the anchorage 11 to the body 12. As shown in the drawing the hose(s) 16 can adopt a helical path, and is not itself taut between the anchorage 11 and buoy 12.

A further hose 17 leads from the body 12 to a tanker 18, which is moored to the body 12 by chains 19 supporting the hose 17. The end of the further hose 17 and chains 19 remote from the body 12 is secured to a conventional buoy (not shown) and to a conventional anchor (also not shown) to hold that end of the hose away from the body 12.

In use a tanker can pick up the far end of the further hose 17 and chains 19, and so draw off oil from the subsea oil field through the riser hose 16 and subsea pipeline 10.

This arrangement permits the tanker to weathervane about the anchorage 11 without having to disconnect from the hose 17.

Conveniently a marker buoy 21 is arranged to float above the body 12.

CLAIMS

1. Loading system for a tanker at an offshore location, and comprising a seabed anchorage, a buoyant riser support body, a plurality of wires securing the body to the anchorage such that the body is held beneath the surface of the water at that location, a plurality of spacers disposed at intervals along the wires to hold the wires laterally apart, a riser hose extending from the vicinity of the anchorage up to the body and constrained by the spacers against lateral movement away from the wires, and a further hose extending from the body to a connection to the tanker, whereby the tanker can weathervane relative to the anchorage.
2. A loading system as claimed in claim 1 in which there are a plurality of riser hoses extending from the vicinity of the anchorage up to the body, and a plurality of further hoses extending from the body to the connection to the tanker.
3. A loading system as claimed in Claim 1 or claim 2 in which there are at least three wires, and the riser hose is constrained to adopt a helical path by the spacers disposed at intervals along those wires.
4. A loading system substantially as hereinbefore described with reference to and as shown in the accompanying drawing.